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Environmental Quality
RISK ASSESSMENT HANDBOOK, VOLUME II: ENVIRONMENTAL EVALUATION

1. Purpose. The overall objective of this manual is to provide U.S. Army Corps of Engineers (USACE) Hazardous, Toxic, and Radioactive Waste (HTRW) managers and technical proponents with the recommended basic/minimum requirements for planning, evaluating, and conducting ecological risk assessments, consistent with USACE principles of good science and in defining expected quality and goals of the overall program.

2. Applicability. This manual applies to ecological risk assessment aspects for all USACE HTRW investigations, studies, and designs under the Department of Defense, Defense Environmental Restoration Program (DERP), Base Realignment and Closure (BRAC), U.S. Environmental Protection Agency (EPA) Superfund Program, Civil Works, and Work for Others. EM 200-1-4, Risk Assessment Handbook, Volume I: Human Health Evaluation, provides guidance on human health risk assessments performed for all HTRW projects.

3. General. Chapter 1 of this manual presents the purpose, scope, concept, and policy considerations, and the use of risk assessment in HTRW programs. It provides a description of the USACE HTRW program, the quality required for performance of ecological risk assessment, and an understanding of how risk assessments serve management decision needs. Relevant Federal statutes/regulations, agency guidance and directives and state requirements are also highlighted in this chapter. Chapter 2 presents the major scoping and project planning elements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984. Particular emphasis is placed on the early development of an Ecological Conceptual Site Model (ECSM). utilizing the data quality objectives planning process presented in EM 200-1-2, Technical Project Planning Guidance for HTRW Data Quality Design, to identify data needs and optimize data collection efforts. Chapters 3 through 8 are intended to provide the risk assessor with the minimum content expected to be included in an ecological risk assessment to adequately serve site decision requirements. They summarize the key components of a Screening Ecological Risk Assessment (Chapter 3), the four tiers employed for Baseline Ecological Risk Assessments (Chapters 4, 5, 6, and 7), and Ecological Risk Assessment of Remedial Alternatives (Chapter 8). These chapters stress the importance of properly identifying the receptors and chemicals of concern and a thorough understanding of the dynamics of interrelationships of multiple receptors and pathways in the development/refinement of an ECSM before embarking on estimating exposure point concentrations. They also highlight the need for characterizing site hazard or risk objectively and realistically to satisfy the regulatory requirement of protection of the environment. Chapter 9 concerns presentation of the risk assessment results for use in risk management and decision-making, focusing on the decisions and criteria needed for making those decisions. Both risk and nonrisk factors are presented for consideration by the manager. This chapter

emphasizes the need for balancing protection of the environment with other project constraints based on the level of confidence and uncertainty in the risk assessment results. Risk results are used for evaluating the need for a removal action, interim corrective measures, or remediation, and to provide the decision criteria and rationale for the selection of remedial alternatives, if required for site closeout. The chapter concludes that the HTRW project team has the responsibility to present risk information as management options to the customer, documenting the uncertainty and rationale.

FOR THE COMMANDER:

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